

**Alaska Department of Fish and Game
Division of Wildlife Conservation
November 1999**

Abundance, Timing, and Demography of Neotropical Migratory Birds During Migration

John M. Wright

**Federal Aid in Wildlife Restoration
Survey-Inventory Activities
Research Final Report
1 July 1998–30 June 1999**

Grant SE-3-6

If using information from this report, please credit the author(s) and the Alaska Department of Fish and Game. The reference may include the following: Wright, J.M. 1999. Population Abundance, Timing, and Demography of Neotropical Migratory Birds During Migration, 1 July 1998–30 June 1999. Alaska Department of Fish and Game. Federal Aid in Wildlife Restoration Research Final Performance Report, Grant SE-3-6. Juneau, Alaska. 13 pp.

STATE OF ALASKA
Tony Knowles, Governor

DEPARTMENT OF FISH AND GAME
Frank Rue, Commissioner

DIVISION OF WILDLIFE CONSERVATION
Wayne L. Regelin, Director

Persons intending to cite this material should receive permission from the author(s) and/or the Alaska Department of Fish and Game. Because most reports deal with preliminary results of continuing studies, conclusions are tentative and should be identified as such. Please give authors credit.

Free copies of this report and other Division of Wildlife Conservation publications are available to the public. Please direct requests to our publications specialist:

Mary Hicks
Publications Specialist
ADF&G, Wildlife Conservation
P.O. Box 25526
Juneau, AK 99802
(907) 465-4190

The Alaska Department of Fish and Game administers all programs and activities free from discrimination on the bases of race, color, national origin, age, sex, religion, marital status, pregnancy, parenthood, or disability. The department administers all programs and activities in compliance with Title VI of the Civil Rights Act of 1964, Section 504 of the Rehabilitation Act of 1973, Title II of the Americans with Disabilities Act of 1990, the Age Discrimination Act of 1975, and Title IX of the Education Amendments of 1972.

If you believe you have been discriminated against in any program, activity, or facility, or if you desire further information please write to ADF&G, P.O. Box 25526, Juneau, AK 99802-5526; U.S. Fish and Wildlife Service, 4040 N. Fairfield Drive, Suite 300, Arlington, VA 22203 or O.E.O., U.S. Department of the Interior, Washington DC 20240.

For information on alternative formats for this and other department publications, please contact the department ADA Coordinator at (voice) 907-465-4120, (TDD) 907-465-3646, or (FAX) 907-465-2440.

RESEARCH FINAL REPORT

STATE: Alaska

COOPERATOR: Alaska Bird Observatory

GRANT NR.: SE-3-6

STUDY TITLE: Abundance, Timing, and Demography of Neotropical Migratory Birds During Migration

AUTHOR: John M Wright

PERIOD: 1 July 1998–30 June 1999

SUMMARY

In 1998 monitoring of migratory landbirds continued for the seventh year at the Creamer's Refuge migration station in a cooperative project with the Alaska Bird Observatory. Mist nets were used to capture birds in spring on 40 days between 25 April and 13 June and in fall on 55 days between 15 July and 30 September. The standard array of nets established in 1997 was operated again in 1998. Spring 1998 capture rates (17.3 birds/100 net hours) and the total of 1168 birds captured were the highest ever recorded. Excluding redpolls, which were unusually abundant and fledged large numbers of young during the netting period, spring captures (7.8/100 net hours; 525 birds caught) were the second highest ever, exceeded only in spring 1992. Fall 1998 capture rates also set new highs with 47.6 birds/100 net hr, totaling 5753 birds captured. Neotropical migrants regularly comprise 70-80% of the species and 70-90% of the individuals captured at the migration station. In spring 1998, although Neotropical migrants comprised 74% of the species captured, they accounted for an unusually low percentage of just 43% of the individuals because of the exceptional abundance of redpolls. In fall 1998, 66% of species and 76% of individual birds captured were Neotropical migrants. The proportion of juvenile birds captured in fall 1998, an index of production, was the highest ever recorded (0.92). In spring the most commonly captured species were the redpoll, yellow-rumped (myrtle) warbler, American robin, Lincoln's sparrow, orange-crowned warbler, dark-eyed (slate-colored) junco, Swainson's thrush, and Savannah sparrow. In fall the yellow-rumped (myrtle) warbler, American tree sparrow, orange-crowned warbler, dark-eyed (slate-colored) junco, Lincoln's sparrow, Wilson's warbler, and ruby-crowned kinglet, were most common.

The educational program continued with banding demonstrations for school classes operating at maximum capacity. Summer demonstrations increased, and a new "Alaska Bird Camp" was initiated.

Key words: Alaska, migration monitoring, mist netting, Neotropical migratory birds.

CONTENTS

SUMMARY	i
BACKGROUND.....	1
OBJECTIVE	2
STUDY AREA.....	2
METHODS	2
RESULTS	2
SPRING 1997	2
FALL 1997.....	3
EDUCATION.....	3
CONCLUSIONS AND RECOMMENDATIONS.....	4
ACKNOWLEDGMENTS.....	4
LITERATURE CITED.....	4
Table 1 Mist netting effort at Creamer's Refuge migration station, 1992-1997	6
Table 2 Numbers of birds captured at Creamer's Refuge migration station, 1997	7
Table 3 Capture rates (birds/100 net hr) of common species and total for all species, Creamer's Refuge migration station, spring 1997	9
Table 4 Capture rates (birds/100 net hr) of common species and total for all species, Creamer's Refuge migration station, fall 1997.....	10
Table 5 Proportion of juvenile (HY) birds in total captures of common species and for all individuals, Creamer's Refuge migration station, fall 1997.....	11
Table 6 Educational programs and visitors, Creamer's Refuge banding station, 1997 ...	12

BACKGROUND

Declines in populations of migrant landbirds have been well documented in North America. Long distance migrants, including flycatchers, thrushes and wood warblers that breed in North America and winter in Neotropical Central and South America, are among the species of concern (Askins et al. 1990; Sauer and Droege 1992). Alaska is an important part of the breeding range of several species of boreal forest landbirds known to be declining in other portions of their North American breeding range.

A concerted international conservation effort, *Partners In Flight* Neotropical Migratory Bird Conservation Program, was developed in the early 1990s to address this problem. In Alaska, the *Boreal Partners in Flight* working group provides coordination and direction for local projects so that a comprehensive statewide monitoring and research program can be formed from the individual efforts of the many partners.

The Creamer's Refuge migration station is operated by the Alaska Bird Observatory in cooperation with ADF&G and a host of other contributors. The migration station is part of the statewide monitoring network, providing information on abundance and productivity on a broad scale to complement Breeding Bird Survey, off-road point counts, and MAPS (Monitoring Avian Productivity and Survival) studies. Approximately 150 migration

monitoring sites are located throughout North America. Creamer's is the northernmost migration monitoring station and the longest-running station in Alaska.

OBJECTIVE

- Gather information on the abundance and productivity of migratory songbirds as part of a long-term monitoring project in the boreal forest of central Alaska.

STUDY AREA

The migration station is located on Creamer's Field Migratory Waterfowl Refuge in Fairbanks and encompasses about 15 ha of boreal forest, shrub, and wetland habitats.

METHODS

An array of mist nets was used to capture birds. Nets were opened about 7 hours each day, from sunrise to early afternoon, weather permitting. The spring 1998 netting season extended from 25 April to 13 June and fall season 15 July to 30 September. In the first 5 years of this project, from 4 to 51 nets were operated on a given day at the station. In 1997 a standard array of mist nets was established using a subset of previous years' nets so that all nets could be operated consistently, regardless of bird abundance or number of staff available. This reduced set of nets was the standard array operated in 1998. Birds were banded with standard aluminum leg bands, and information was collected on age, sex, wing chord, tail length, fat index, breeding condition, and molt.

Public education programs were also provided at the banding station. A 30–45 minute banding demonstration with information about bird migration, biology, and conservation was provided to 2–3 classes of local school children each school day in May and September. Structured programs were also provided to groups from summer science camps and tours. In addition, the Alaska Bird Observatory initiated a new "Alaska Bird Camp" in 1998. Scheduled visitors were supplied with activity guides and individual booklets before their visit to the banding station. Impromptu presentations were provided to unscheduled drop-in visitors.

RESULTS

SPRING 1998

Twenty-six nets were operated on 40 days in spring 1998 for a total of 6760 net hours, about 10% less than in 1997 due to more days of inclement weather in 1998 (Table 1). One thousand one hundred and sixty-eight birds were captured, representing 28 species (Table 2). The capture rate in spring 1998 (17.3 birds/100 net hr) was far higher than the previous high (10.5) in 1992 and nearly 4 times the rate in 1997 (Table 3). Much of this was due to an unprecedented abundance of redpolls, including a large number of juvenile redpolls fledged early in the season. However, even with redpolls excluded, spring 1998 capture rates were still high, second only to 1992. As in previous springs, a high proportion of species captured were Neotropical migrants (74%; equally split between Type A, species wintering primarily south

of the US/Mexico border and Type B migrants, species with some populations wintering south of the US/Mexico border). However, the proportion of individuals belonging to Types A (16%) and B (27%) was lower than usual, due to the exceptionally large number of redpolls (55% of total individuals captured). In prior years, 70 to 90% of birds captured were Neotropical migrants. In spring 1998 the most commonly captured species were the redpoll, yellow-rumped (myrtle) warbler, American robin, Lincoln's sparrow, orange-crowned warbler, dark-eyed (slate-colored) junco, Swainson's thrush, and Savannah sparrow.

Among the 16 most commonly captured species, redpolls were captured in spring 1998 at the highest rates ever recorded for the species in the 7 years of netting, more than 8 times the previous high rate in 1992 (Table 3). None of the 16 commonly captured species set a new low capture rate for their species. When 1998 capture rates for these 16 species were compared with their average rate of capture for the first 6 years (1992–1997), 10 species were captured at a higher rate than their previous 6-year average, and 4 were captured at rates below average. Three species were captured at rates in spring 1998 roughly equal to their 6-year average.

FALL 1998

In fall 1998 nets were operated for 55 days for a total of 12,091 net hours. These numbers were lower than in 1997 because more days were rained out in 1998 (Table 1). A total of 5755 birds were captured in fall 1998, representing 38 species. The overall capture rate of 47.6 birds/100 net hours was the highest recorded in the 7 years of fall netting, and far exceeded the average rate (28.6) for the first 6 years. As in prior years, most (66%) species captured were Type A (34%) or Type B (32%) Neotropical migrants, as were most (77%) individuals (Type A, 31%; Type B, 46%). The yellow-rumped (myrtle) warbler, American tree sparrow, orange-crowned warbler, dark-eyed (slate-colored) junco, Lincoln's sparrow, Wilson's warbler, and ruby-crowned kinglet were captured most frequently.

Among the 19 regularly captured species in fall, 4 (orange-crowned warbler, American tree sparrow, fox sparrow, and dark-eyed junco) were captured at the highest rates recorded in the 7 years of fall netting, and no species set a new low record (Table 4). Ten species were caught at higher rates than their prior 6-year (1992–1997) average, 4 were captured at lower rates than average, and 5 were captured at average rates.

In fall 1998 92% of birds captured were young of the year (HY, hatch year) (Table 5). This exceeds the proportion of young observed in 6 prior years (75–90%). The proportion of young in 7 of the commonly captured species was higher in 1998 than in any prior year, while no new lows were recorded. Among the 19 common species, the proportion of young captured in fall 1998 exceeded the average in 17 species and was lower than average in just 2 species.

EDUCATION

Eighty school groups (1944 individuals) participated in banding demonstrations provided by the Alaska Bird Observatory in 1998, essentially the same number as in 1997. This is the maximum number that can be accommodated in the 2 months when the banding station is active while schools are in session. The number of demonstrations in summer grew to 27 (447

individuals) in 1998 from 17 (294) in 1997. The Alaska Bird Observatory initiated a new intensive, weeklong "Alaska Bird Camp" in 1998, with eight 9–12-year-olds attending. The program was considered a great success and will be offered again next year. Workshops on the "Basics of Birding," "Warblers," and other topics were also provided on the Refuge.

CONCLUSIONS AND RECOMMENDATIONS

This was the seventh year of the long-term monitoring effort at Creamer's Refuge. The banding station is a cooperative project conducted by the Alaska Bird Observatory with support from the Department. This arrangement with a local nonprofit organization has proven capable of sustaining the consistent effort necessary to maintain a project requiring 15–20 years or more of data collection. Recent analyses and reviews have confirmed the usefulness of standardized netting stations for study of the abundance and productivity of migratory bird populations (Dunn and Hussell 1995; Johnson and Geupel 1996; Dunn et al. 1997). In addition to its value in monitoring species of concern, this project is also gathering important information on the timing of migration, reproduction, molt, juvenile dispersal, changes in body condition, and other life-history events and has become a valued educational program for school children and the community.

ACKNOWLEDGMENTS

This project was supported by Endangered Species funding through Federal Aid in Wildlife Restoration. Funding was also provided by the Alaska Bird Observatory and its members, US Fish and Wildlife Service (Cost Share Challenge Grant), ABR Inc., ARCO Alaska, Exxon Company USA, Bureau of Land Management, Lawson–Valentine Foundation, and the Skaggs Foundation.

The dedicated board of directors and staff of the Alaska Bird Observatory are responsible for the success of this long-term project. I would especially like to thank Lori Quakenbush, Board President, Anna-Marie Benson, Chief Biologist, Nancy DeWitt, Executive Director, Steve Springer, Banding Biologist, and Andrea Swingley, Education Coordinator for the key roles they played in this effort. Thanks also to the interns and volunteers who regularly got up before dawn to run the nets. Mark Ross, ADF&G, developed complementary educational programs for visiting school children.

LITERATURE CITED

- ASKINS RA, JF LYNCH, AND R GREENBERG. 1990. Population declines in migratory birds in Eastern North America. Pages 1–57 *in* DM Power, editor. Current Ornithology Volume 7, Plenum Press, New York.
- DUNN EH AND DT HUSSELL. 1995. Using migration counts to monitor landbird populations; review and evaluation of current methods. Pages 43–88 *in* DM Power, editor. Current Ornithology Volume 12, Plenum Press, New York.

DUNN EH, DT HUSSELL, AND RJ ADAMS. 1997. Monitoring songbird population change with autumn mist netting. *Journal of Wildlife Management* 61:389-396.

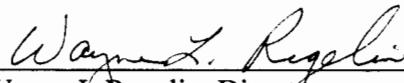
JOHNSON MD AND GR GUEPEL. 1996. The importance of productivity to the dynamics of a Swainson's Thrush population. *Condor* 98:133-141

SAUER JR AND S DROEGE. 1992. Geographic patterns in population trends of neotropical migrants in North America. Pages 26-42 in JM Hagan and DW Johnston, editors. *Ecology and Conservation of Neotropical Migrant Landbirds*, Smithsonian Institution Press, Washington, DC.

PREPARED BY:

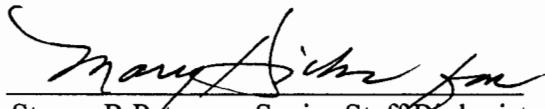
John M Wright
Wildlife Biologist III

APPROVED BY:


Wayne L. Regelin, Director
Division of Wildlife Conservation

SUBMITTED BY:

Kenneth R Whitten
Research Coordinator


Steven R Peterson, Senior Staff Biologist
Division of Wildlife Conservation

•

•

•

•

Table 1 Mist netting effort at Creamer's Refuge migration station, 1992-1998

Season	Description	Year						
		1992	1993	1994	1995	1996	1997	1998
Spring	Number of days nets open	42	43	41	45	44	42	40
	Net hours	6903	10,552	11,252	12,731	12,411	7,548	6,760
	Number of nets per day	16-29	16-33	27-47	36-47	33-45	26	26
Fall	Number of days nets open	46	53	52	58	57	66	55
	Net hours	5890	13,711	13,934	14,156	14,985	14,617	12,091
	Number of nets per day	4-35	11-47	21-51	16-49	18-49	36	36

Table 2 Birds captured at Creamer's Refuge migration station, 1998

Species	Migration Type ^a	Spring 1998	Fall 1998
Northern Harrier (<i>Circus cyaneus</i>)	B		1
Sharp-shinned Hawk (<i>Accipiter striatus</i>)	B	1	14
Merlin (<i>Falco columbarius</i>)	A		2
Common Snipe (<i>Gallinago gallinago</i>)	B		2
Downy Woodpecker (<i>Picoides pubescens</i>)	R	1	1
Hairy Woodpecker (<i>Picoides villosus</i>)	R		1
Northern Flicker (<i>Colaptes auratus</i>)	B		2
Yellow-bellied Flycatcher (<i>Empidona flaviventris</i>)	A		1
Alder Flycatcher (<i>Empidonax alnorum</i>)	A	5	57
Hammond's Flycatcher (<i>Empidonax hammondi</i>)	A	11	34
Tree Swallow (<i>Tachycineta bicolor</i>)	B	1	
Black-capped Chickadee (<i>Poecile atricapillus</i>)	R	5	44
Boreal Chickadee (<i>Poecile hudsonicus</i>)	R	1	14
Golden-crowned Kinglet (<i>Regulus satrapa</i>)	N		1
Ruby-crowned Kinglet (<i>Regulus calendula</i>)	B	4	139
Arctic Warbler (<i>Phylloscopus sibilatrix</i>)	P		3
Gray-cheeked Thrush (<i>Catharus minimus</i>)	A	14	40
Swainson's Thrush (<i>Catharus ustulatus</i>)	A	39	107
Hermit Thrush (<i>Catharus guttatus</i>)	B	5	24
American Robin (<i>Turdus migratorius</i>)	B	79	23
Varied Thrush (<i>Ixoreus naevius</i>)	N		6
Bohemian Waxwing (<i>Bombycilla garrulus</i>)	R	1	1
Northern Shrike (<i>Lanius excubitor</i>)	N		3
Orange-crowned Warbler (<i>Vermivora celata</i>)	A	53	918
Yellow Warbler (<i>Dendroica petechia</i>)	A	12	84
Yellow-rumped (myrtle) Warbler (<i>Dendroica coronata</i>)	B	99	1351
Townsend's Warbler (<i>Dendroica townsendi</i>)	A		5
Blackpoll Warbler (<i>Dendroica striata</i>)	A	7	44
Northern Waterthrush (<i>Seiurus noveboracensis</i>)	A	14	40
Wilson's Warbler (<i>Wilsonia pusilla</i>)	A	14	153
American Tree Sparrow (<i>Spizella arborea</i>)	N	12	1203
Savannah Sparrow (<i>Passerculus sandwichensis</i>)	B	38	95
Fox Sparrow (<i>Passerella iliaca</i>)	B	7	70
Lincoln's Sparrow (<i>Melospiza lincolnii</i>)	A	22	284

Table 2 Continued

Species	Migration Type ^a	Spring 1998	Fall 1998
Golden-crowned Sparrow (<i>Zonotrichia atricapilla</i>)	N		2
White-crowned (Gambell's) Sparrow (<i>Zonotrichia leucophrys</i>)	B	30	97
Dark-eyed (slate-colored) Junco (<i>Junco hyemalis</i>)	B	49	816
Rusty Blackbird (<i>Euphagus carolinus</i>)	N	1	4
Common Redpoll (<i>Carduelis flammea</i>)	N	643	69
Totals		1168	5753
Dates nets open		25 Apr–13 Jun	15 Jul–30 Sep
Number of days nets operated		40	55
Number of net hours		6760	12091

^a Winter range/migration: A = primarily south of US/Mexico border; B = some populations south of US/Mexico border; P = Pacific/Eurasia/Africa; N = North America; R = Resident.

Table 3 Capture rates (birds/100 net hr) in spring of common species and total for all species, Creamer's Refuge migration station, spring 1998

Species	1992	1993	1994	1995	1996	1997	1998
Hammond's Flycatcher	0.17	0.12	0.14	0.17	0.06	0.12	0.16
Ruby-crowned Kinglet	0.29	0.01	0.04	0.05	0.06	0.04	0.06
Gray-cheeked Thrush	0.23	0.13	0.19	0.09	0.18	0.07	0.21
Swainson's Thrush	0.41	0.45	0.49	0.38	0.63	0.33	0.58
American Robin	0.45	0.34	0.28	0.35	0.29	0.50	1.17
Orange-crowned Warbler	0.58	0.47	0.40	0.36	0.24	0.25	0.78
Yellow Warbler	0.67	0.26	0.36	0.06	0.17	0.13	0.18
Yellow-rumped Warbler	1.58	0.93	0.48	0.70	0.65	0.94	1.46
Northern Waterthrush	0.33	0.13	0.58	0.19	0.44	0.32	0.21
Wilson's Warbler	0.48	0.51	0.51	0.46	0.14	0.17	0.21
American Tree Sparrow	0.51	0.01	0.08	0.07	0.19	0.01	0.18
Savannah Sparrow	0.83	0.14	0.29	0.25	0.42	0.20	0.56
Lincoln's Sparrow	0.09	0.05	0.11	0.16	0.10	0.11	0.99
White-crowned Sparrow	0.20	0.08	0.16	0.08	0.07	0.17	0.44
Dark-eyed Junco	0.42	0.09	0.21	0.29	0.73	0.45	0.72
Common Redpoll	1.17	0.18	1.99	0.68	0.08	0.20	9.51
Total (all species)	10.46	4.27	6.91	4.63	4.87	4.29	17.28

Table 4 Capture rates (birds/100 net hr) in fall of common species and total for all species, Creamer's Refuge migration station, fall 1998

Species	1992	1993	1994	1995	1996	1997	1998
Alder Flycatcher	0.58	0.55	0.44	0.47	0.48	0.86	0.47
Hammond's Flycatcher	0.14	0.10	0.29	0.35	0.59	0.50	0.28
Black-capped Chickadee	0.58	0.18	0.21	0.48	0.31	0.23	0.36
Ruby-crowned Kinglet	0.88	0.65	0.91	0.87	1.56	1.36	1.15
Gray-cheeked Thrush	0.63	0.18	0.20	0.35	0.11	0.28	0.33
Swainson's Thrush	1.06	0.67	0.73	1.24	0.59	1.29	0.88
American Robin	2.73	0.15	0.27	0.24	0.24	0.27	0.27
Orange-crowned Warbler	7.35	1.71	4.23	6.12	3.06	4.41	7.59
Yellow Warbler	2.17	0.43	0.64	1.38	0.76	1.29	0.69
Yellow-rumped Warbler	13.40	0.41	7.18	4.15	7.77	8.44	11.17
Blackpoll Warbler	1.38	0.15	0.35	0.36	0.33	0.70	0.36
Northern Waterthrush	0.69	0.22	0.12	0.20	0.22	0.36	0.33
Wilson's Warbler	2.15	0.79	0.83	1.19	0.50	1.27	1.26
American Tree Sparrow	1.81	2.88	2.46	4.66	1.83	5.22	9.95
Savannah Sparrow	0.75	0.52	0.20	1.23	0.55	0.72	0.78
Fox Sparrow	0.26	0.23	0.30	0.23	0.25	0.45	0.58
Lincoln's Sparrow	2.73	1.09	1.27	2.56	1.56	1.68	2.35
White-crowned Sparrow	0.69	0.31	0.43	0.30	0.80	0.48	0.80
Dark-eyed Junco	2.33	1.18	3.84	2.92	3.86	3.17	6.75
Total (all species)	43.16	12.58	25.32	30.78	26.73	33.41	47.58

Table 5 Proportion of juvenile (HY, hatch year) birds in fall captures of common species and for all individuals, Creamer's Refuge migration station, fall 1998

Species	1992	1993	1994	1995	1996	1997	1998
Alder Flycatcher	0.89	0.61	0.76	0.64	0.72	0.68	0.82
Hammond's Flycatcher	0.89	0.85	0.76	0.96	0.89	0.90	1.00
Black-capped Chickadee	0.94	0.75	0.69	0.90	0.93	0.94	1.00
Ruby-crowned Kinglet	0.82	0.90	0.89	0.91	0.87	0.87	0.91
Gray-cheeked Thrush	0.79	0.76	0.75	0.78	0.88	0.76	0.90
Swainson's Thrush	0.82	0.79	0.86	0.91	0.96	0.90	0.89
American Robin	0.42	0.50	0.89	0.76	0.86	0.85	0.87
Orange-crowned Warbler	0.83	0.63	0.86	0.86	0.84	0.79	0.91
Yellow Warbler	0.91	0.58	0.88	0.84	0.94	0.94	0.90
Yellow-rumped Warbler	0.91	0.75	0.94	0.91	0.95	0.94	0.93
Blackpoll Warbler	0.94	0.71	0.86	0.94	0.96	0.92	0.84
Northern Waterthrush	0.93	0.87	0.94	0.93	0.97	0.90	0.98
Wilson's Warbler	0.90	0.67	0.84	0.89	0.85	0.96	0.96
American Tree Sparrow	0.67	0.72	0.87	0.81	0.85	0.90	0.93
Savannah Sparrow	0.87	0.92	0.96	0.96	0.98	0.92	0.88
Fox Sparrow	0.69	0.77	0.79	0.81	0.78	0.68	0.83
Lincoln's Sparrow	0.92	0.79	0.93	0.95	0.97	0.93	0.95
White-crowned Sparrow	0.86	0.90	0.90	0.91	0.93	0.94	0.93
Dark-eyed Junco	0.84	0.88	0.96	0.90	0.91	0.89	0.93
Total (all individuals captured)	0.84	0.75	0.90	0.87	0.90	0.89	0.92

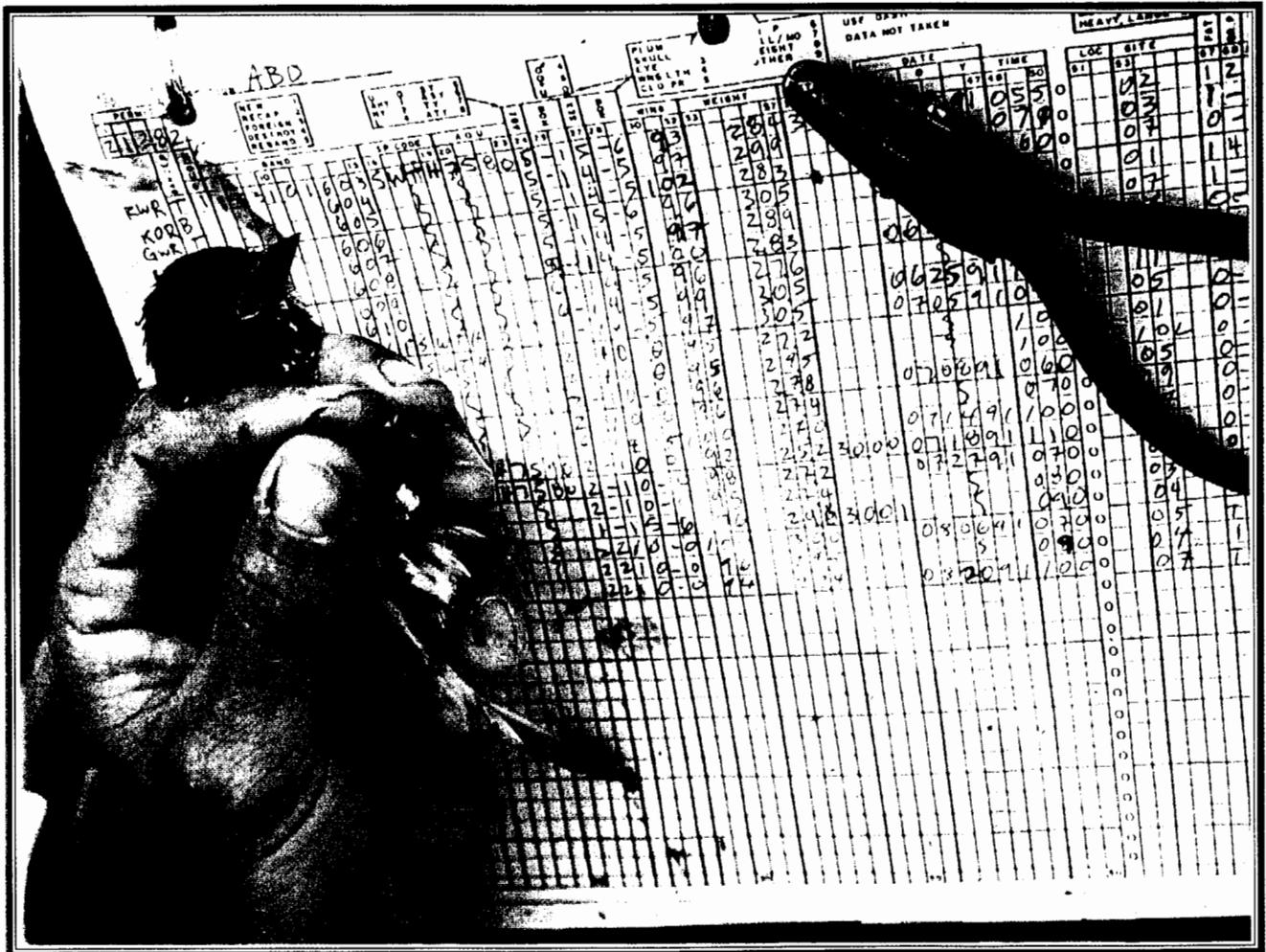
Table 6 Educational programs and visitors, Creamer's Refuge banding station, 1998

Season	Number of groups	Number of individuals in groups	Number of drop-in visitors
Spring	39	875	100
Summer	27	447	270
Fall	41	1069	52
Alaska Bird Camp	1	8	0
Totals	108	2399	422

Capture rates (birds/100 net hr) in spring of common species and total for all species, Creamer's Refuge migration station, spring 1998

Species	1992	1993	1994	1995	1996	1997	1998
Hammond's Flycatcher	0.17	0.12	0.14	0.17	0.06	0.12	0.16
Ruby-crowned Kinglet	0.29	0.01	0.04	0.05	0.06	0.04	0.06
Gray-cheeked Thrush	0.23	0.13	0.19	0.09	0.18	0.07	0.21
Swainson's Thrush	0.41	0.45	0.49	0.38	0.63	0.33	0.58
American Robin	0.45	0.34	0.28	0.35	0.29	0.50	1.17
Orange-crowned Warbler	0.58	0.47	0.40	0.36	0.24	0.25	0.78
Yellow Warbler	0.67	0.26	0.36	0.06	0.17	0.13	0.18
Yellow-rumped Warbler	1.58	0.93	0.48	0.70	0.65	0.94	1.46
Northern Waterthrush	0.33	0.13	0.58	0.19	0.44	0.32	0.21
Wilson's Warbler	0.48	0.51	0.51	0.46	0.14	0.17	0.21
American Tree Sparrow	0.51	0.01	0.08	0.07	0.19	0.01	0.18
Savannah Sparrow	0.83	0.14	0.29	0.25	0.42	0.20	0.56
Lincoln's Sparrow	0.09	0.05	0.11	0.16	0.10	0.11	0.99
White-crowned Sparrow	0.20	0.08	0.16	0.08	0.07	0.17	0.44
Dark-eyed Junco	0.42	0.09	0.21	0.29	0.73	0.45	0.72
Common Redpoll	1.17	0.18	1.99	0.68	0.08	0.20	9.51
Total (all species)	10.46	4.27	6.91	4.63	4.87	4.29	17.28

The Federal Aid in Wildlife Restoration Program consists of funds from a 10% to 11% manufacturer's excise tax collected from the sales of handguns, sporting rifles, shotguns, ammunition, and archery equipment. The Federal Aid program allots funds back to states through a formula based on each state's geographic area and number of paid hunting license holders. Alaska receives a maximum 5% of revenues collected each year. The Alaska Department of Fish and Game uses federal aid funds to help restore, conserve, and manage wild birds and mammals to benefit the public. These funds are also used to educate hunters to develop the skills, knowledge, and attitudes for responsible hunting. Seventy-five percent of the funds for this report are from Federal Aid.



Alaska Bird Observatory

Banding Fox Sparrow while monitoring migratory landbirds